

kernelci.org needs you!

Mark Brown & Kevin Hilman, ELC-E 2016, Berlin



Introduction

- kernelci.org overview
- Results review & follow up
- Lab setup
- LAVA v2 installation & setup
- Contributing code
- Other relevant ELC-E talks
 - Building a Bards Farm: Continuous Integration and Remote Control - Antoine Tenart & Quentin Schulz, Free Electrons
 - Wednesday, October 12 • 09:00 - 09:50
 - <https://openiotelceurope2016.sched.org/event/7rs8/building-a-bards-farm-continuous-integration-and-remote-control-antoine-tenart-quentin-schulz-free-electrons>
 - Herd your boards, become a farmer - Geert Uytterhoeven
 - Tuesday, October 11 14:00 - 14:50
 - <https://openiotelceurope2016.sched.org/event/7rsl/herd-your-boards-become-a-farmer-geert-uytterhoeven-glider-bvba>

What is kernelci.org

- Automatic build & boot testing for the kernel
 - ARM, ARM64, MIPS and x86
 - Many kernel trees
 - 260+ builds/tested commit (all in-tree defconfigs plus extras)
 - ~500 boots/tested commit over ~100 boards
 - 7500 jobs, 2,000,000 boots
 - <http://kernelci.org/stats/>
- Results reported via mailing lists and web site

Results

- Much more likely that kernels will build...
 - v3.10: 53 failed configs
 - v3.14: 51 failed configs
 - v4.1: 1 failed config
 - Mainline: usually 0 failed configs outside of merge window
 - Currently higher due to MIPS
 - -next: this is where the errors get caught

Results

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 - -next: this is where the errors get caught
- ...and run
- More solid basis for development
- Made merge window and early -rcs much less stressful

Get involved

- Review results
- Contribute hardware
- Contribute a lab
- Contribute to kernelci.org infrastructure

Reviewing results

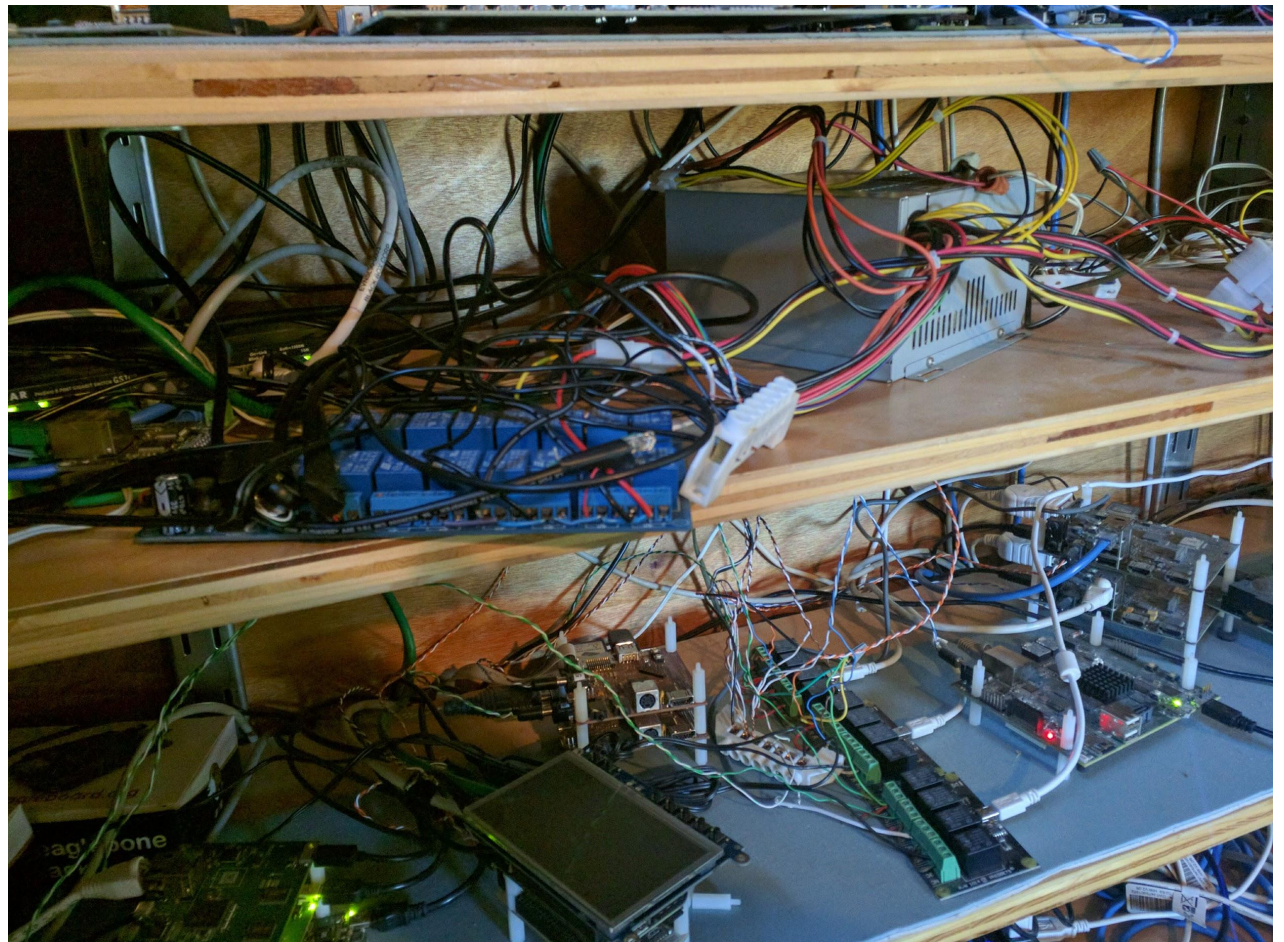
- Look at report e-mails for issues
 - Follow links in mail or use web UI for logs
- Do some basic triage
 - Compare against mainline
 - Look for likely causes
 - Bisect
- Follow up to the mail
 - Then follow up to your follow up!

Results review example

Live demo time!

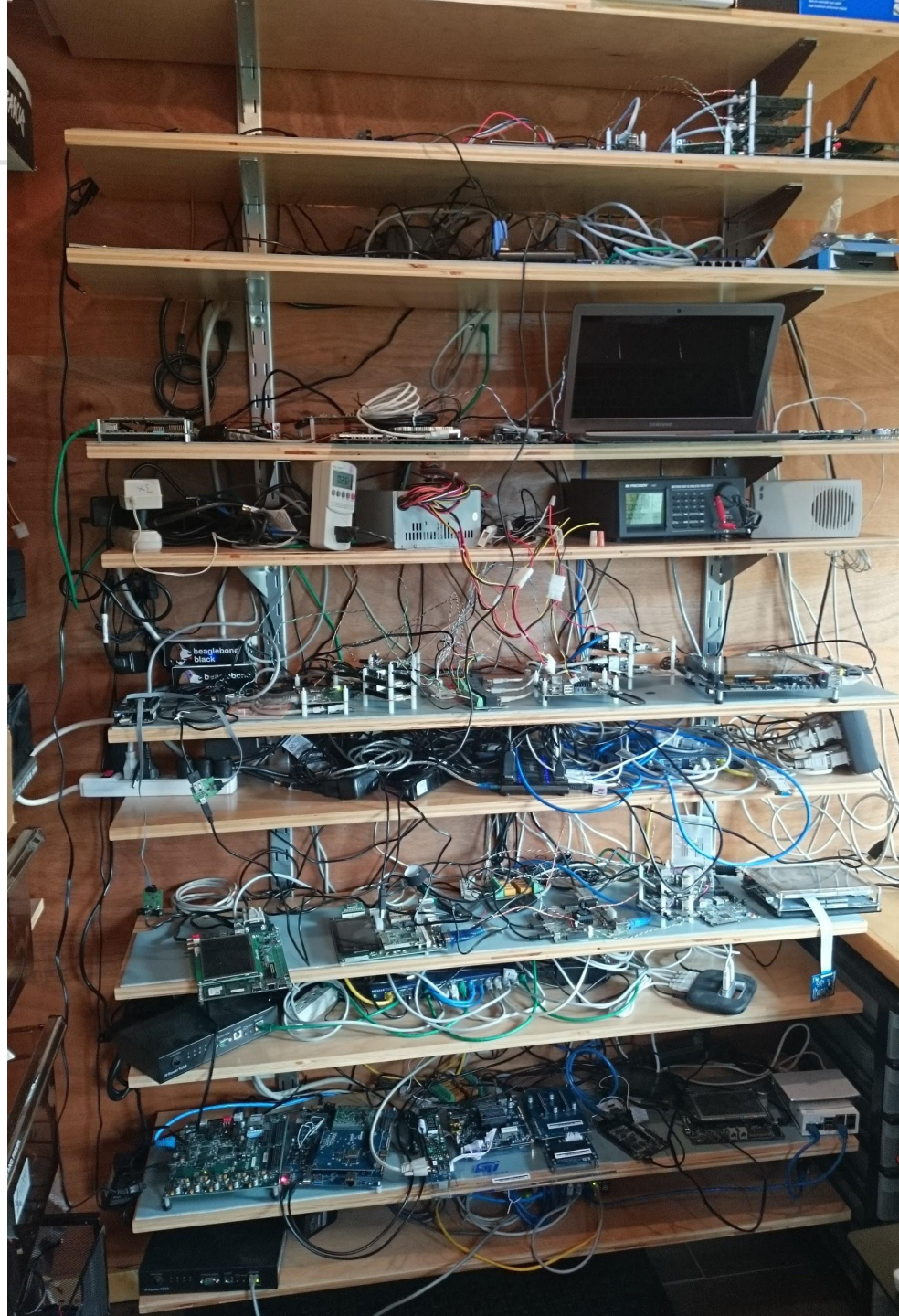
Contributing hardware

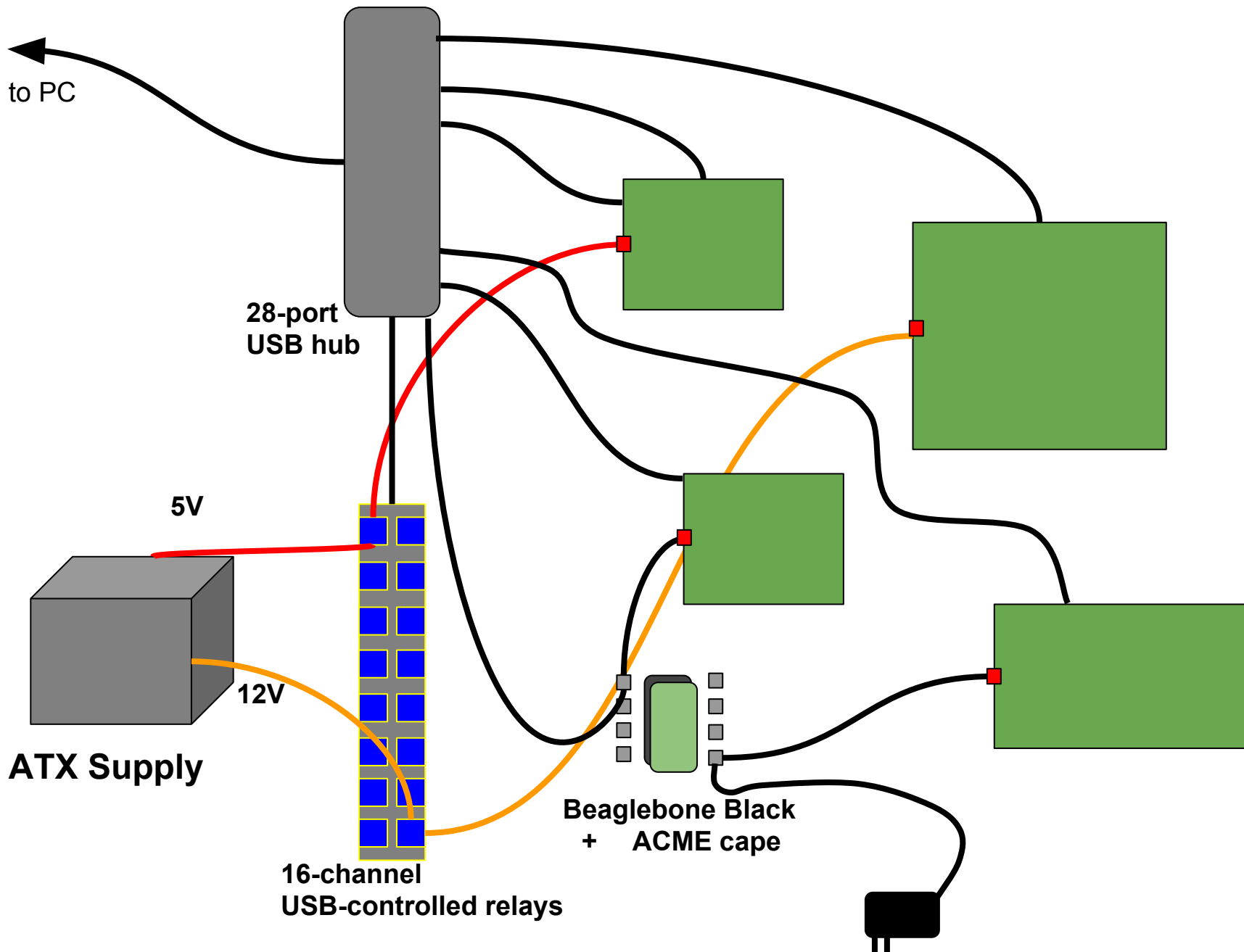
- info@kernelci.org



Setting up a lab

- Useful for your own use
 - No plugging/unplugging boards
 - Good for regression testing
- Other talks provide more detail for hardware
- Tools like BayLibre ACME make life easier
 - <http://baylibre.com/acme/>





What is LAVA?

- Job runner & scheduler for board farms
- Used by almost all kernelci.org labs
- <http://validation.linaro.org>
 - Running instance
 - Documentation
- Skip v1, work with v2
 - v2 much easier to use
 - Currently rolling out
- Developed & distributed for Debian
 - See LAVA site for other distros/source install
 - Or install in a VM or container
- For kernelci need internet access
 - Static public IP
 - Use an IPv6 tunnel
 - Host the master in the cloud

LAVA web UI demo

- Tempting fate again

LAVA installation

- Ensure backports are enabled
 - `deb http://deb.debian.org/debian/ jessie-backports main`
- Install the packages
 - `apt-get install postgresql`
 - `apt-get install -t jessie-backports lava`
- Enable in Apache
 - `a2ensite lava-server`
- SSL configured as standard for Apache
- Add a superuser
 - `lava-server manage createsuperuser`
- Log in via web UI

Adding devices

- Both web and command line configuration
 - Web UI is <http://lava.example.com/admin/>
- Start with adding a qemu device
 - `apt-get install -t jessie-backports qemu`
- Need a device type
 - Device types in `/etc/lava-server/dispatcher-config/device-types`
 - `qemu.jinja2`
 - `beaglebone-black.jinja2`
 - http://lava.example.com/admin/lava_scheduler_app/devicetype/add/
- And a specific device
 - Devices in `/etc/lava-server/dispatcher-config/devices`
 - http://lava.example.com/admin/lava_scheduler_app/device/add/
 - Set a name
 - Check “Is public” and “Is pipeline device”
 - Tell LAVA about config
 - `lava-server manage device-dictionary --hostname qemu01 --import /etc/lava-server/dispatcher-config/devices/qemu01.jinja2`

Adding devices

- Add a health check job to check things are running
 - https://validation.linaro.org/static/docs/v2/first_steps.html
- Important config options for hardware devices
 - power_on_command
 - power_off_command
 - console_device
 - baud_rate

Adding users & bundle streams

- <http://lava.example.com/admin/auth/user/add/>
 - kernelci typically uses kernel-ci
 - Create separate users for local use
- http://lava.example.com/admin/dashboard_app/bundlestream/add/
 - kernelci typically uses /anonymous/kernel-ci/
 - You can share bundle streams
- Generate an API token
 - Log in as the user
 - <http://lava.example.com/api/tokens/>
 - For kernelci contact info@kernelci.org with a token
- For submitting jobs locally use lava-tool
 - `lava-tool auth-add http://user@lava.example.com/RPC2/`
 - `lava-tool submit-job https://<username>@validation.linaro.org/RPC2/ filename`

LAVA worker installation

- Don't need to connect all the boards to one machine
- Only needs lava-dispatcher, configured for pipeline
 - `apt-get install -t jessie-backports lava-dispatcher`
- Point the lava-slave daemon at your master
 - Edit `/etc/init.d/lava-slave`
- Add worker on the master
 - http://lava.example.com/admin/lava_scheduler_app/worker/add/
- All configuration of devices on the master
 - Set worker to be the worker the device is attached to
 - Works with qemu devices!
- Enable authentication and encryption
 - Essential if any of this is internet accessible!
 - <https://validation.linaro.org/static/docs/v2/pipeline-server.html#enable-master-encryption>

kernelci.org code

- <https://github.com/kernelci/>
- Main needs
 - Reporting/tracking of testsuite results
 - Multiple compiler support
 - Tracking of metrics like image sizes
 - More scalable architecture
 - Power tracking (BayLibre working on this)
 - More log analysis (full text search?)

Contributors - Q&A time

- Developed by
 - Tyler Baker (Linaro)
 - Milo Casagrande (Linaro)
 - Kevin Hilman (BayLibre)
- Labs
 - BayLibre, Collabora, Embedded Bits, Free Electrons, Jan-Simon Möller, Kevin Hilman, Linaro, Mark Brown, Matt Hart, Pengutronix, TI, Tyler Baker... you?

<http://kernelci.org/>

irc.freenode.org #kernelci

info@kernelci.org



More about Linaro Connect: <http://connect.linaro.org>

More about Linaro: <http://www.linaro.org/about/>

More about Linaro engineering: <http://www.linaro.org/engineering/>

Linaro members: www.linaro.org/members